
4C.4 SOCIAL SYSTEMS

4C.4.1 Socio-Cultural Characteristics

4C.4.1.1 Alternative C – CPAI Development Plan Impacts on Socio-Cultural Characteristics

Socio-cultural impacts under Alternative C-CPAI Development Plan would generally be similar to those under Alternative A – CPAI Development Plan with the following differences.

Under Alternative C, additional roads would be included with some providing direct access to Nuiqsut. This direct access may increase contact between non-resident industry workers and members of the village. Increased demand for local services could result in increasing induced employment and local wage and business income to the cash economy.

Changes to subsistence harvest impacts (as described in Section 4B.4.3) may result from the increased length of roads. To the extent that they occur, changes to subsistence harvest may increase indirect effects on community health and welfare.

4C.4.1.2 Alternative C – FFD Plan Impacts on Socio-Cultural Characteristics

Socio-cultural impacts under Alternative C FFD are expected to be the same as those under Alternative C FFD with the following differences.

Under Alternative FFD, additional roads would be included with some providing direct access to Nuiqsut. This direct access may increase contact between non-resident industry workers and members of the village. Increased demand for local services could result in increasing induced employment and local wage and business income to the cash economy.

Two additional airstrips, with associated increased aircraft operations, would also be included in this alternative. Changes to subsistence harvest impacts (as described in Section 4B.4.3) may result from the increased length of roads and additional airstrips. To the extent that they occur, changes to subsistence harvest may increase indirect effects on community health and welfare.

4C.4.1.3 Alternative C – Summary of Impacts (CPAI and FFD) on Socio-Cultural Characteristics

Impacts to socio-cultural characteristics under Alternative C – CPAI Development Plan and Alternative C – FFD are generally expected to be the same as those under Alternative A – CPAI Development Plan and Alternative A – FFD. Exceptions under Alternative C are the potential for increased local economic activity and increased indirect community health and welfare impacts to the extent that they are caused by increased impacts to the subsistence harvest.

4C.4.1.4 Alternative C – Potential Mitigation Measures (CPAI and FFD) on Socio-Cultural Characteristics

Potential mitigation measures would be the same as those identified for Alternative A (Section 4A.4.1)\

4C.4.2 Regional Economy

4C.4.2.1 Alternative C – CPAI Development Plan Impacts on Regional Economy

There is no information to lead to the assumption that overall oil production for CPAI Development Plan – Alternative C would vary materially from the estimates given in Section 4A.4.2, Production, that were estimated for Alternative A. Because the economic impacts are directly related to oil production, the economic impacts of Alternative C would be similar to those determined for Alternative A. However, the road connec

tion linking Nuiqsut to all of the production pads and to the existing Alpine facilities could increase local employment and local wage and business income.

4C.4.2.2 Alternative C – FFD Plan Impacts on Regional Economy

There is no information to lead to the assumption that overall oil production for FFD Alternative C would vary materially from the estimates given in Section 4A.4.2, Production, that were estimated for Alternative A. Because the economic impacts are directly related to oil production, the economic effects of FFD Alternative C would be similar to those determined for FFD Alternative A. However, the road connection linking Nuiqsut to all of the production pads and to the existing Alpine facilities could increase local employment and local wage and business income.

4C.4.2.3 Alternative C – Summary of Impacts (CPAI and FFD) on Regional Economy

Overall economic impacts from Alternative C would be the same as those determined for Alternative A, though there may be additional economic stimulus to Nuiqsut.

4C.4.2.4 Alternative C – Potential Mitigation Measures (CPAI and FFD) for Regional Economy

Potential mitigation measures would be the same as those identified Alternative A (Section 4A.4.2).

4C.4.3 Subsistence

4C.4.3.1 Alternative C – CPAI Development Plan Impacts on Subsistence

Effects for similar components in Alternative A would be the same for Alternative C (gravel mines, pads, roads, and pipelines outside the Fish and Judy creeks sensitive area) and are not specifically discussed in this section. The Alternative C discussion focuses on ways in which this alternative differs from Alternative A.

Construction Period

Road and pipeline construction effects on subsistence uses would be the same as for Alternative A (disturbance to wildlife resources in the vicinity of the roads and adjacent pipelines), except these effects would be closer to Nuiqsut west of the Nigliq Channel. Connecting the road to Nuiqsut would bring the construction effects even closer to Nuiqsut and increase traffic in the community. The construction of a road from CD-1 to CD-3 would increase sedimentation and change flow patterns, which would reduce available summer and winter fish habitat and decrease the availability of fish for subsistence uses. The relocated Nigliq Channel bridge would have the same effect on summer and winter fish habitats and subsistence uses as discussed in Alternative A, but the effect would occur closer to the community.

During pipeline and road construction, availability of subsistence resources, especially caribou, would be reduced along the construction corridors and hunter access would be reduced as hunters avoid hunting and shooting near workers and equipment. Construction of an overhead power line several miles north of the road and pipeline corridor (the more direct route from CD-5 to CD-7 to CD-7) also would reduce wildlife availability and hunter access along this corridor during the construction period. Constructing the power line within the 3-mile Fish and Judy creeks sensitive area would move this effect closer to the subsistence camps in the area.

Operation Period

Under Alternative C, the addition of a road from Nuiqsut to development areas would increase access to subsistence use areas with vehicles, primarily in periods without snow. However, increased traffic would deflect terrestrial mammals, reducing availability of these resources in development areas. In addition, increased access would result in increased competition for subsistence resources in the development area as more hunters are focused to the road. Unrestricted access on BLM-administered lands (NPR-A, including Fish and Judy

creeks) could eventually provide increased access to people who do not live in the area. Because no outside road currently provides connection to this area, however, access by people who do not live in the area is not an immediate effect. The increase of the minimum pipeline height to 7 feet would allow for less obstruction to terrestrial mammals and subsistence hunters, especially in winter. Locating the road and pipeline west of the Nigliq Channel closer to Nuiqsut would bring any activity on the road and corresponding disturbance to wildlife and associated reduced availability closer to Nuiqsut for the life of the applicant's proposed action. The power line located in the Fish Creek sensitive area would affect subsistence after construction if it provided an access corridor during summer. The increase of the minimum pipeline height to 7 feet would allow for less obstruction to terrestrial mammals and subsistence hunters, especially in winter.

4C.4.3.2 Alternative C – Full Field Development Plan Impacts on Subsistence

Effects caused by the FFD scenario are analyzed in a more general way than those for the CPAI Development Plan because of the hypothetical nature of the scenario. For assessment of effects to subsistence because of the FFD scenario, the Plan Area is divided into groups: the Colville River Delta Facility Group, the Fish-Judy Creeks Facility Group, and the Kalikpik-Kogru Rivers Facility Group. The Alternative C FFD scenario is discussed in Section 2.4.4.

Colville River Delta Facility Group

Roads in the Colville River Delta area would increase sedimentation and change flow patterns, reducing available summer and winter fish habitat, and therefore decreasing the availability of fish for subsistence uses. The construction of roads would require the construction of bridges, which would improve access for subsistence users. However, these bridges might decrease fish habitat and road traffic may deflect terrestrial subsistence resources, which would decrease availability of these resources for subsistence uses. The higher pipeline required in this alternative would allow for less obstruction to terrestrial mammals and subsistence hunters, especially in winter.

Fish-Judy Creeks Facility Group

Roads connecting Nuiqsut and the 11 additional pads and additional production facility in the Fish and Judy Creeks Facility Group would provide increased vehicle access to subsistence resources and would cause increased competition for subsistence resources if more hunters were focused to the roads. At the same time, the roads would result in local deflection and disturbance of terrestrial mammals in the vicinity of the roads, depending on traffic frequency, and therefore reduce subsistence availability of resources along the roads.

The road network connecting the 12 new pads and the facility would provide summer access to areas customarily accessible by boat at that time of year and would likely change historical and current subsistence use patterns. (Harvesters could drive over land to Fish Creek in summer, instead of traveling down the Colville River to Harrison Bay to Fish Creek.)

Unrestricted road access on BLM-managed lands could eventually provide increased access to the Fish and Judy Creeks area by people who do not live in the area and increase competition for resources. Because no outside road currently provides connection to this area, however, access by people who do not live in the area is not an immediate effect. As with Alternative A, the location of the production and processing pads, roads, and pipelines within the Fish and Judy creeks sensitive area would result in bringing the development infrastructure near important subsistence use and locations of cabins and camps. In short, more roads would result in more traffic, which would result in more disturbances to subsistence resources that would cause less resource availability to subsistence users in those areas. The increase of the minimum pipeline height to 7 feet would allow for less obstruction to terrestrial mammals and subsistence hunters, especially in winter.

Kalikpik-Kogru Rivers Facility Group

The effects of roads connected to Nuiqsut and the higher pipeline are similar to the effects for the other two groups discussed above.

4C.4.3.3 Alternative C – Summary of Impacts (CPAI and FFD) on Subsistence

Effects from construction and operation for the Alternative C CPAI Development Plan and FFD Plan are expected to continue for the life of the development and are expected to be primarily local in extent for the CPAI Development Plan and regional in extent for the FFD Plan. Construction and operation would affect availability of key subsistence resources because of deflection or displacement of these resources (by road traffic) from customary harvest locations. Access to subsistence resources would be affected by pipelines, especially in winter because of snowdrifts (mitigated by 7-foot pipelines that allow for less obstruction to terrestrial mammals and subsistence hunters), avoidance of pads and industrial areas, the perception of regulatory barriers, the reluctance to shoot rifles in the vicinity of industrial development, the difficulty of negotiating road berms while hunting in winter, and a preference for animals not habituated to industrial development.

Roads connecting pads to production facilities and a road connecting Nuiqsut to the development area would provide increased vehicle access to subsistence resources and would cause increased competition for subsistence resources if more hunters are focused to the roads. At the same time, vehicular traffic on the roads would result in local deflection and disturbance of terrestrial mammals in the vicinity of the roads and, therefore, would reduce subsistence availability of resources. This impact would be greatest for Alternative C because it has more roads than any other alternative and is the only alternative that provides a road connection to Nuiqsut.

Unrestricted road access to BLM lands could eventually provide increased access to people who do not live in the area and increase competition for resources. Because no outside road currently provides connection to this area, however, access by people who do not live in the area would not be an immediate effect. The location of the production facility, pads, roads, and pipelines within the Fish and Judy creeks sensitive area would result in bringing the development infrastructure near important subsistence use and locations of cabins and camps.

The road network connecting 17 of the 24 new locations and four of the five proposed drilling and production pads would provide summer access to areas generally reachable only by boat in summer and would likely change current subsistence use patterns (harvesters could drive over land to Fish Creek or Judy Creek or the Kalikpik River in summer instead of only traveling by boat).

Indirect effects would include hunters going to other areas that would result in harvesting in traditional places less often and increased effort, costs, and risk associated with traveling farther. Alternative C would occur in seasonal and general use areas for key subsistence resources that are used for multiple seasons each year, have been used for multiple generations, and are used for multiple resources each year. Effects from construction and operation would occur in key geographic areas relative to other areas of subsistence availability and would pertain to individual subsistence users, groups of users, and the overall pattern of Nuiqsut subsistence uses. Competition for certain resources among Nuiqsut, Anaktuvuk Pass, Barrow, and Atkasuk would increase as Nuiqsut hunters avoid traditional subsistence use areas closer to Nuiqsut and travel to farther outlying areas.

4C.4.3.4 Alternative C – Potential Mitigation Measures (CPAI and FFD) for Subsistence

Potential mitigation measures would be similar to those identified for Alternative A (Section 4A.4.3), deleting only that which would raise the minimum pipeline height to 7 feet.

4C.4.4 Environmental Justice

4C.4.4.1 Introduction

The basis for identifying disproportionate impacts to minority and low-income populations is described in Section 4A.4.4.

4C.4.4.2 Alternative C – Disproportionate Impacts (CPAI and FFD) on Environmental Justice

Disproportionate impacts under Alternative C, and Alternative C FFD are expected to be the same as those under Alternative A for both cases (see Section 4A.4.4). Changes in the access to production facilities incorporated in Alternative C are not expected to change the type or level of impacts identified. Relaxation of access restriction limitations that would increase access to BLM lands may increase competition for subsistence resources.

4C.4.4.3 Alternative C – Potential Mitigation Measures (CPAI and FFD) for Environmental Justice

Potential mitigation measures to reduce or avoid disproportionate impacts would be the same as those identified for Alternative A (Section 4A.4.4).

4C.4.5 Cultural Resources

4C.4.5.1 Alternative C – CPAI Development Plan Impacts on Cultural Resources

Despite the relocation and the addition of roads in the lower Colville river delta, the impacts on cultural resources for Alternative C would be approximately the same as for Alternative A. Under Alternative C, no additional documented cultural resources are in the immediate vicinity of the proposed operational facilities, roads, or pipelines. Section 106 consultations should assure that Alternative C would have no direct effect and negligible indirect effect on known cultural resources during construction and operation. Additional need for gravel will increase the risk to unknown cultural resources through excavation at mine sites.

4C.4.5.2 Alternative C – FFD Plan Impacts on Cultural Resources

Despite the relocation of some roads and the addition of more roads in the lower Colville Delta, development under this alternative would have approximately the same impacts to known cultural resources as Alternative A. Because more gravel would be used in this alternative, the risk to unknown cultural resources from gravel extraction will be increased.

4C.4.5.3 Alternative C – Summary of Impacts (CPAI and FFD) on Cultural Resources

Impacts resulting from implementation of Alternative C are similar to those of Alternative A. Known cultural resource sites that could be affected under Alternative C are the same as Alternative A. Because more gravel will be needed, the risk of impacts to unknown cultural resources from extraction will be greater than for Alternative A.

4C.4.5.4 Alternative C – Potential Mitigation Measures (CPAI and FFD) on Cultural Resources

Potential mitigation measures would be the same as those identified for Alternative A (Section 4A.4.5).

4C.4.6 Land Uses and Coastal Management

4C.4.6.1 Alternative C – CPAI Development Plan Impacts on Land Uses and Coastal Management

Land Ownership and Uses

The CPAI Development Plan under Alternative C would affect the same landowners as described in Alternative A. Implementation of this development would not change ownership status on lands within the Plan Area, but would happen under negotiated leases. In addition, Kuukpik Corporation is still able to select lands, and those lands would likely be within the oil reserves. As previously stated, those lands selected are under BLM jurisdiction until patented.

The proposed development of oil production satellites and related facilities under Alternative C would result in more total area developed within the Plan Area as compared to Alternatives A or B. Alternative C calls for development of approximately 380 acres, including production pads, roads, and airstrips. This would result in more than a 300 percent increase in the total number of acres currently developed for oil production activities within the Plan Area.

Alternative C would provide road access from the existing Alpine facilities east of Nigliq Channel to the satellite facilities west of the channel as well as road access from Alpine to CD-3 in the Colville River Delta. Access would be limited to oil industry personnel and Nuiqsut residents on the roads outside the NPR-A but would be unrestricted on BLM-managed lands. The increased access and activity levels in the Colville River Delta and the NPR-A could change areas used for subsistence or recreation. Effects to subsistence and recreation are discussed further in Sections 4C.4.3 and 4C.4.7. Other permitted uses within the ASDP Area, such as scientific studies, communications and navigation-related uses, and overland resupply transport between villages, are not expected to be affected by the proposed development.

Alternative C is similar to Alternative A in its conformance with the BLM stipulations developed to protect sensitive resources within the NPR-A. Under Alternative C, the CD-6 access road and pipelines would be located within the 3-mile buffer around Fish Creek stipulated for no permanent oil and gas surface facilities. Construction impacts to the Fish Habitat LUEA would be less than for Alternative A because a portion of the road and pipelines would be moved outside the 3-mile buffer. Because of the larger overall development area associated with Alternative C, gravel extraction operations would increase. There could be slightly less flight activity during operations under Alternative C because of increased road access to all satellite production facilities. Impacts from Alternative C would be greater than for Alternative B, which removes all facilities from the area. Development under Alternative C is similar to Alternative A in that CD-6 and its associated facilities would be within the Fish Creek buffer area, and some roads and bridges would be within water-body setback areas. No other Special Areas or LUEAs would be directly affected by Alternative C.

Coastal Zone Management

Development proposed under Alternative C includes construction and operation of five satellite production pads, as well as roadways and pipelines. Although many of these facilities are proposed to be on federal lands that are not considered to be within the coastal zone, the ASDP also proposes substantial development in the Colville River Delta, which is considered to be within the coastal zone.

Alaska Coastal Management Program

The coastal standards are evaluated for Alternative C below.

Coastal Development (6 AAC 80.040)

The CPAI Development Plan under Alternative C increases road development within the coastal zone. Road access is proposed from the existing Alpine development to CD-3 as well as from Alpine west across the Nigliq Channel. Stipulations on development within the NPR-A require that there continue to be access to the coastal resources used for subsistence and for transport of supplies for the local village; therefore, development of these facilities is not expected to displace other important coastal uses. However, Alternative C does not conform with BLM stipulations related to the Fish Creek buffer area with respect to roads and bridges. Development under Alternative C conforms less to the coastal standard than do Alternatives A or B.

Geophysical Hazard Areas (6 AAC 80.050)

Facilities proposed under Alternative C would be required to incorporate design measures to protect permafrost and natural drainage patterns and to protect the built structures from flood events, scour, ice jams, and storm surges. It would be more difficult to meet this standard under Alternative C because of the extent of roadways proposed to be constructed in the Colville River Delta. The dynamic hydrogeology and extensive floodwaters of the Delta would require these roads to be constructed with much higher embankments and with much more stabilization to address potential damage from floods and ice floes in this area.

Recreation (6 AAC 80.060)

Development proposed under Alternative C would result in direct road access from Nuiqsut to all of the satellite facilities. Road access to CD-3 from the existing Alpine facilities would be limited to industry personnel and Nuiqsut residents. Road access within the NPR-A, however, would not be restricted. This would increase access to the NPR-A areas because people could fly to Nuiqsut and travel by road into areas of the NPR-A that were previously hard to access. This is likely to result in higher activity levels in these areas. Effects on recreation from this increased access are addressed further in Section 4C.4.7.

Energy Facilities (6 AAC 80.070)

Alternative C conforms less with the energy facility standards by proposing more road development, thus increasing the distance for shipping routes and area affected within the Colville River Delta from the existing Alpine facility to CD-3. This alternative would also provide direct road access from Nuiqsut to areas within the Fish Creek buffer area and proposes location of CD-6 and its access roads within the buffer area. The increased development footprint and increased access into remote areas is likely to increase adverse effects on coastal resources beyond those of other alternatives.

Transportation and Utilities (6 AAC 80.080)

The development proposed under Alternative C would substantially increase road development within the ASDP Area. Alternative C includes road connections to all satellite fields, with connections to the existing Alpine facilities and the village of Nuiqsut. The proposed roads are primarily inland, but do cross into the Fish Creek buffer area, which was established to protect sensitive fisheries habitat.

Mining and Mineral Processing (6 AAC 80.110)

Development under Alternative C would require gravel pad and road development covering approximately 385 acres. The increased development of road access under this alternative would increase the amount of gravel needed. Any effects, however, could be minimized through permits. Gravel sources for this alternative would be the same as those discussed under Alternative A.

Subsistence (6 AAC 80.120)

The proposed ASDP under Alternative C would provide new road access from Nuiqsut to CD-3 in the Colville River Delta and to CD-6 within the Fish Creek buffer area. This direct road connection would be expected to result in increased access to and activity in areas used for subsistence. The potential for adverse effects on subsistence from the proposed development are discussed in more detail in Section 4C.4.3.

Habitats (6 AAC 80.130)

Development under Alternative C would maximize the effects on sensitive habitats through increased development within the ASDP Area. In particular, the additional road proposed to connect CD-3 to the existing Alpine facility and other satellite sites would increase effects on wetlands, lakes, and other sensitive habitats.

Air, Land, and Water Quality (6 AAC 80.140)

Compliance with ADEC and USEPA regulations would ensure conformance with this coastal management standard for the CPAI Development Plan Alternative C.

Historic, Prehistoric, and Archaeological Resources (6 AAC 80.150)

Development under Alternative C would require the same process for protection of cultural resources as discussed under previous alternatives. The increased access resulting from more roads and more access to remote sites would be likely to increase the potential for inadvertent impacts to previously undocumented cultural resources.

North Slope Borough Coastal Management Program

The CPAI's Development Plan for Alternative C would be less consistent with the NSB *Standards for Development* (NSB CMP 2.4.3) because of the location of facilities within buffer areas and water-body setbacks and the increased road access to areas used for subsistence. Potential effects on subsistence and cultural resources would be expected to be higher for this alternative than for Alternatives A or B.

Alternative C would comply with the NSB's *Required Features for Applicable Development* (NSB CMP 2.4.4) through compliance with the BLM stipulations, including the restrictions on vehicle and aircraft activities in areas where wildlife species are sensitive to noise and movement, during certain time periods. Although seasonal restrictions would apply, overall vehicle use throughout the area would increase under Alternative C because of the increased access provided by connecting all satellites with roads.

Development under Alternative C would address NSB *Best Effort Policies* (NSB CMP 2.4.5). These policies call for protection of sensitive coastal resources, including subsistence and cultural resources. These issues have been addressed above in the ACMP discussion. Again, Alternative C would be expected to have a higher potential for adverse effects because of the increased access to the remote satellites.

The NSB CMP also contains standards for *Minimization of Negative Impacts* (NSB CMP 2.4.6). The proposed development under Alternative C includes design measures to protect permafrost and to address geophysical hazards as discussed above under the ACMP. The extensive road development proposed under Alternative C, however, would not minimize impacts to sensitive habitats, particularly in the Colville River Delta.

North Slope Borough Land Management Regulations

As discussed under Alternative A, most of the land within the NSB is zoned as Conservation, with the exception of some village sites and the existing oilfields at Prudhoe Bay and Alpine. The NSB's Resource Development zoning classification covers areas designated for oil development activities. Development to the east of

the NPR-A in the Colville River Delta under Alternative C would require a rezoning of the development areas to the Resource Development classification.

4C.4.6.2 Alternative C – FFD Plan Impacts on Land Uses and Coastal Management

Land Ownership and Uses

The FFD scenarios under Alternative C would affect the same landowners as described in FFD Alternative A. Implementation of these developments would not change ownership status on lands within the ASDP Area, but would happen under negotiated leases. In addition, Kuukpik Corporation is still able to select lands and those lands would likely be within the oil reserves. As previously stated, those lands selected are under BLM jurisdiction until patented.

FFD would result in development throughout the ASDP Area, with an additional 22 production pads, two additional processing facilities, and associated roads, pipelines, and airstrips for a total development of 1,930 acres. FFD would result in a substantial increase in the area developed within the Colville River Delta, Fish-Judy Creeks, and Kalikpik-Kogru Rivers facility groups. Road access would be constructed to all remote satellites throughout the three facility groups. Access would remain limited to oil industry personnel and Nuiqsut residents on roadways in the Colville River Delta but would be unrestricted within the NPR-A. There would likely be a substantial increase in activity levels in these areas from operation of the facilities and the increased access. Effects on subsistence resources and recreation for FFD are discussed in Sections 4C.4.3 and 4C.4.7.

The FFD scenario under Alternative C would include development of road access to all satellite production facilities. The increased development areas associated with this scenario would likely require development of new gravel resources and would likely have more potential for adverse effects on sensitive resources.

Coastal Management

The coastal standards are evaluated for Alternative C FFD below.

Alaska Coastal Management Program

Coastal Development (6 AAC 80.040)

Alternative C FFD proposes the same 22 production satellites described under Alternative A. Road access is proposed to all satellite facilities, including those in the lower Colville River Delta and on the shore near the Kogru River. The extensive road development within the Colville River Delta would be expected to result in a higher potential for adverse effects on coastal resources than the other alternatives, which limit road construction in these areas. Alternative C FFD conforms less with the coastal standard than do Alternatives A or B.

Geophysical Hazard Areas (6 AAC 80.050)

As with Alternative C, facilities proposed under the Alternative C FFD scenario would be required to incorporate design measures to protect permafrost and natural drainage patterns and to protect the built structures from flood events, scour, ice jams, and storm surges. It would be more difficult to meet this standard under FFD for Alternative C because of the extent of roadways proposed to be constructed in the Colville River Delta. The Delta's dynamic hydrogeology and extensive floodwaters would require these roads to be constructed with much higher embankments and with much more stabilization to address potential damage from floods and ice floes in this area.

Recreation (6 AAC 80.060)

Development of facilities under FFD would result in road access throughout the lower Colville River Delta as well as the Fish-Judy Creeks and the Kalikpik-Kogru Rivers facility groups. Increased access under this sce

nario would be likely to result in a substantial increase in activity throughout these areas. Effects on recreation from this increased access are addressed further in Section 4C.4.7.

Energy Facilities (6 AAC 80.070)

Alternative C FFD would increase the potential for environmental impacts by increasing road construction and situating roads, bridges, and other facilities within buffers, water-body setbacks, and areas restricted from surface uses. Thus, Alternative C FFD conforms less with this standard than do Alternatives A or B FFD.

Transportation and Utilities (6 AAC 80.080)

The FFD scenario calls for development of road access to all satellite facilities situated throughout the ASDP Area. Development of extensive roads throughout the Colville River Delta does not conform to the standard for siting roads inland and away from shorelines. Other alternatives that propose access to areas in the Colville River Delta conform more closely with this standard.

Mining and Mineral Processing (6 AAC 80.110)

Alternative C FFD would require substantially more gravel than FFD under Alternative A. FFD would likely require gravel resources beyond those currently identified. Any new gravel mining operation within the coastal zone would be required to receive a permit, which would ensure compliance with state coastal management standards and protection of coastal resources.

Subsistence (6 AAC 80.120)

FFD would result in widespread development of roadways to access satellite facilities throughout the ASDP Area. Access on industry roads in the Colville River Delta would be limited, but access on roads in the NPR-A would be unrestricted. Increased access and increased activity levels in formerly remote areas could affect subsistence resources. Potential effects on subsistence from development under the FFD scenario are discussed further in Section 4C.4.3.

Habitats (6 AAC 80.130)

FFD would result in additional impacts to coastal habitats. Impacts from FFD under Alternative C would exceed the impacts from other alternatives because of the significant increase in road access and acres developed.

Air, Land, and Water Quality (6 AAC 80.140)

Compliance with ADEC and USEPA regulations would ensure conformance with this coastal management standard for the proposed Alternative C FFD.

Historic, Prehistoric, and Archaeological Resources (6 AAC 80.150)

Alternative C FFD would require the same process for protection of cultural resources as discussed under Alternatives A and B. The increased access resulting from more roads and more access to remote sites would be likely to increase the potential for inadvertent impacts to previously undocumented cultural resources.

North Slope Borough Coastal Management Program

Alternative C FFD would be less consistent with the NSB *Standards for Development* (NSB CMP 2.4.3) because of the location of facilities within buffer areas and water-body setbacks and the increased road access to areas used for subsistence. Potential effects on subsistence and cultural resources would be expected to be higher for this alternative than for FFD Alternatives A or B.

Alternative C FFD would comply with the NSB's *Required Features for Applicable Development* (NSB CMP 2.4.4) through compliance with the BLM stipulations, including the restrictions on vehicle and aircraft activities during certain time periods in areas where wildlife species are sensitive to noise and movement. Although seasonal restrictions would apply, overall vehicle use throughout the area would increase under Alternative C FFD because of the increased access provided by connecting all satellites with roads.

Alternative C FFD would address NSB *Best Effort Policies* (NSB CMP 2.4.5). These policies call for protection of sensitive coastal resources, including subsistence and cultural resources. These issues have been addressed above in the ACMP discussion. Again, Alternative C FFD would be expected to have a higher potential for adverse effects because of the increased access to the remote satellites.

The NSB CMP also contains standards for *Minimization of Negative Impacts* (NSB CMP 2.4.6). The proposed development under Alternative C FFD includes design measures to protect permafrost and to address geophysical hazards as discussed above under the ACMP. The extensive road development proposed under Alternative C FFD, however, would not minimize impacts to sensitive habitats, particularly in the Colville River Delta.

North Slope Borough Land Management Regulations

As discussed under FFD Alternative A, most of the land within the NSB is zoned as Conservation, with the exception of some village sites and the existing oilfields at Prudhoe Bay and Alpine. The NSB's Resource Development zoning classification covers areas designated for oil development activities. Development east of the NPR-A in the Colville River Delta under Alternative C FFD would require a rezoning of the development areas to the Resource Development classification.

4C.4.6.3 Alternative C – Summary of Impacts (CPAI and FFD) on Land Uses and Coastal Management

Impacts resulting from implementation of Alternative C are similar to those of Alternative A. Construction and operation of the CPAI Development Plan Alternative C would not be anticipated to result in adverse effects on existing land use and ownership. A direct impact, however, would be the increase in the acres of developed land. Development under this alternative of the five oil accumulations identified by CPAI would result in nearly quadrupling the total number of acres developed for oil production within the ASDP Area. Additional impacts of concern for Alternative C to special use areas would be the construction and operation of facilities within the designated Fish Creek buffer zone. Construction of CD-6 and associated and pipeline roads, although some would be rerouted to outside of the buffer area, would require approval of minimal development within Fish Creek buffer area. Mitigation measures would require CPAI to obtain a waiver of the no permanent facilities restriction from BLM. Approval for minimal development within the Fish Creek buffer area would be necessary for CPAI to implement the proposed plan. FFD of a production pad and associated pipeline in the area near the Kogru River designated for no surface activities would require an exemption from the surface use restrictions for that area. It also would require approval for additional development within the Fish Creek buffer area, Sensitive Consultation areas, and the special caribou stipulation area.

Coastal and land management impacts are not anticipated to have adverse effects. Under the NSB Land Management Regulations, however, the rezoning of land under the NSB from Conservation to Resource Development would be required for implementation of CPAI's proposed project.

4C.4.6.4 Alternative C – Potential Mitigation Measures (CPAI and FFD) for Land Uses and Coastal Management

No mitigation measures have been identified for Alternative C or Alternative C FFD.

4C.4.7 Recreation Resources

4C.4.7.1 Alternative C – CPAI Development Plan Impacts on Recreation Resources

The impacts of Alternative C to existing recreation use and values will be similar to those for Alternative A. The CPAI proposal to develop five pads could potentially affect the recreational experience, including values of solitude, quietude, naturalness, and wilderness, over approximately 40,000 acres. However, the current recreational use of the Plan Area is very low, and most recreation occurs directly along the Colville River where activities associated with Nuiqsut already have decreased some of these recreation values. Alternative C's road connection to Nuiqsut could create opportunities for increased recreational from the village. Nevertheless, as with Alternative A, recreational opportunities in the Plan Area would remain consistent with the BLM's SPM classification.

4C.4.7.2 Alternative C – FFD Plan Impacts on Recreation Resources

Under the FFD alternative, the types of effects on hunting, fishing, and birding opportunities and the qualities of solitude, quietude, naturalness, and wilderness would be the same as those described for the CPAI Development Plan. However, the potential for such effects would increase under FFD as a result of the increased geographic scope of development. In addition to the potential effects on approximately 40,000 acres from the CPAI Development Plan, the recreational opportunities on up to an additional 192,000 acres could be affected if as many as 24 proposed processing or production pads were to be developed. The level of impacts for FFD would be similar to that under Alternative A, with the exception of increased recreational use by Nuiqsut residents.

4C.4.7.3 Alternative C – Summary of Impacts (CPAI and FFD) on Recreation Resources

Construction and operation of the facilities proposed under Alternative C and Alternative C FFD may increase recreational opportunities by Nuiqsut residents, but otherwise is not expected to result in more than local adverse effects to the currently lightly used recreational resources of the Plan Area.

4C.4.7.4 Alternative C – Potential Mitigation Measures (CPAI and FFD) for Recreation Resources

No mitigation measures have been identified.

4C.4.8 Visual Resources

4C.4.8.1 Alternative C – CPAI Development Plan Impacts on Visual Resources

Construction Period

Construction impacts for Alternative C would be roughly the same as those described for Alternative A. Construction of more roads, and especially roads closer to Nuiqsut, could increase visual impacts from construction.

Operation Period

Under this alternative there would be a road connection to Nuiqsut, resulting in more vehicular traffic and fugitive dust viewable in the foreground to middle-ground for Nuiqsut residents. Pipelines that parallel roads closer to Nuiqsut may also marginally increase the visual impact on residents of that community. The minimum elevation of pipelines would be 7 feet instead of 5 feet above the tundra. When viewed from the foreground-middle-ground, the pipelines would create slightly more contrast with the natural landscape. Power lines hung from 60-foot power poles rather than VSMs would create substantially more vertical contrast with the natural landscape than the other alternatives.

4C.4.8.2 Alternative C – FFD Plan Impacts on Visual Resources

Construction- and operation-related impacts would be similar to those described for Alternative A. Although there would be more gravel roads and power poles and slightly higher pipelines compared to Alternative A, these changes would have negligible impacts because the slightly elevated horizontal lines created by them follow the form of the relatively flat natural landscape.

4C.4.8.3 Alternative C – Summary of Impacts (CPAI and FFD) on Visual Resources

Alternative C would result in greater adverse impacts to visual resources than Alternatives A and B. An increase in vehicular traffic, fugitive dust along with the utilization of power poles and increased height of the proposed pipeline, would result in an increase of impacts as compared to other proposed alternatives.

4C.4.8.4 Alternative C – Potential Mitigation Measures (CPAI and FFD) for Visual Resources

Potential mitigation measures would include those identified for Alternative A (Section 4A.4.8), as well as burying pipeline most visible from Nuiqsut near the junction with the spur road to the village.

4C.4.9 Transportation

4C.4.9.1 Alternative C – CPAI Development Plan Impacts on Transportation

Roadways

Alternative C would result in the construction of 41 miles of new gravel roads, and 41.1 miles of pipelines within the Plan Area. No airstrips would be constructed because all of the production pads would be accessible by road. On BLM-managed lands, use of the roadways would be unrestricted; outside of NPR-A, use of the roadways would be limited to oil industry personnel and residents of the village of Nuiqsut. The road network would connect to Nuiqsut.

Construction Period

Construction activities, phasing, and workforce under Alternative C would be the same as under Alternative A. No adverse effects on public roadway systems are anticipated.

Operation Period

Operation of the facilities proposed under Alternative C would result in a greater level of traffic within the Plan Area than under Alternative A both because there would be more roads (and no new airstrips) and because road access directly to Nuiqsut would facilitate more traffic by local residents.

Railroad Transportation

Rail transport needs and effects would be the same for Alternative C as under Alternatives A and B.

Marine Facilities

Marine transportation need and effects for Alternative C would be the same as under Alternatives A and B.

Aviation Facilities

Air transport of the construction workforce to the North Slope would be the same as under Alternative A. Less construction air support would be required for later construction phases because there would be road access to

all construction sites. In addition, construction workers could be flown directly from Deadhorse to Nuiqsut and could access construction sites by road from Nuiqsut once the gravel roads were constructed.

The demand for aviation support for the production pads under Alternative C would require less flight support than under Alternatives A or B because direct road access would be available to all construction sites. Operations would not be expected to adversely affect air transportation resources within the region.

Pipelines

As in Alternatives A and B, there would be no effects on existing pipeline facilities during the construction phase, production flows will likely be managed to remain within the capacity of the existing sales oil pipeline, and the projected increase in throughput to TAPS is expected to remain well within the capacity of the pipeline.

4C.4.9.2 Alternative C – FFD Plan Impacts on Transportation

Roadways

Construction impacts to public roadways would be similar to those identified for Alternative A. Operations traffic associated with Alternative C would be substantially higher and more widespread than that associated with other FFD scenarios. The extensive network of roads and bridges would provide year-round access across the entire Plan Area. This road network would also connect to Nuiqsut. Operations activities would result in substantially more traffic throughout the Plan Area compared to other alternatives, particularly during summer months when there had been very limited previous access to many of these areas. The traffic generated would not adversely affect any public roads.

Railroad Transportation

The effects on rail transport would be the same for Alternative C as under Alternatives A and B.

Marine Facilities

The effects on marine transportation for Alternative C would be the same as under Alternatives A and B.

Aviation Facilities

The FFD Plan under Alternative C would require less air support during construction and operations than under Alternatives A or B because all sites would be accessible by road.

Pipelines

Pipeline needs for the FFD Plan under Alternative C are similar to those discussed under Alternatives A and B and should be able to be met with existing infrastructure, supplemented with new pipeline to handle additional phased production.

4C.4.9.3 Alternative C – Summary of Impacts (CPAI and FFD) on Transportation

Construction and operation of the facilities proposed under Alternative C and Alternative C FFD in the Plan Area are not expected to result in adverse effects to transportation resources. Existing and proposed roads, airstrips, and pipelines are expected to adequately transport personnel, materials, and product throughout the Plan Area and into statewide transportation systems. Both local and statewide transportation systems are considered

to have adequate capacity to accommodate the level of activity anticipated during construction and operation of the facilities.

4C.4.9.4 Alternative C – Potential Mitigation Measures (CPAI and FFD) for Transportation

No mitigation measures have been identified.